Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously Presented) A system for detecting trace amounts of water vapor in natural gas comprising:

a light source emitting light at substantially a single wavelength having a width sufficiently narrow to conduct single line spectroscopy and corresponding to a single absorption line at which water molecules absorb light at a substantially greater level than natural gas molecules;

a detector configured to detect the intensity of light emitted from said light source; and

electronics coupled to said detector for determining the level of water vapor in the natural gas using single line harmonic spectroscopy.

2. (Original) The system of claim 1 wherein said light source is a tunable diode laser.

3. (Original) The system of claim 1 wherein said light source is color center laser.

4. (Original) The system of claim 1 wherein said light source is a quantum cascade laser.

5. (Original) The system of claim 1 wherein said detector is an InGaAs detector.

6. (Previously Presented) The system of claim 1 further comprising means for calibrating the system relative to a known concentration of water vapor within the natural gas.

7. (Previously Presented) The system of claim 1 wherein the light source operates at a wavelength within the range of 1.877-1.901 μm.

8. (Currently Amended) The system of claim 1 wherein the light source operates substantially at a wavelength selected from a group comprising: 2.711-2.786 μm.

9. (Previously Presented) The system of claim 1 wherein the light source operates at a wavelength within the range of 920 to 960 nm.

10. (Currently Amended) A method for determining trace amounts of water in natural gas comprising ~~the steps of~~:

generating light at substantially a single wavelength having a width sufficiently narrow for conducting single line spectroscopy and corresponding to a single absorption line at which water molecules absorb light at a substantially greater level than natural gas molecules;

passing the generated light through a sample of natural gas;

detecting the light passed through the natural gas; and

determining the level of water within the natural gas based on the level of detected light ~~and~~ using single line harmonic spectroscopy.

11. (Original) The method of claim 10 wherein the generated light has a wavelength in the range of one of the group comprising: 1.877-1.901 μm, 2.711-2.786 μm, and 920-960 nm.

12. (Currently Amended) A system for detecting trace amounts of water vapor in natural gas in a pipeline sampling shelter comprising:

~~a sampling shelter;~~

at least one optical gas sensor housed within said sampling shelter;

a supply line coupled to the pipeline and said optical gas sensor for supplying natural gas to said optical gas sensor; and whereas said optical gas sensor comprises:

a Herriott cell having two opposing mirrors;

a light source emitting light at substantially a single wavelength having a width sufficiently narrow to conduct single line spectroscopy and corresponding to a single absorption line at which water molecules absorb light at a substantially greater level than natural gas

molecules through said Herriott cell and configured to reflect off the mirrors to pass through the natural gas at least two times;

a detector configured to detect the intensity of light emitted from said light source after the light reflects off the mirrors at least two times; and

electronics coupled to said detector for determining the level of water vapor in the natural gas using single line harmonic spectroscopy.

13. (Previously Presented) A system for detecting trace amounts of water vapor in natural gas comprising:

optical means for emitting light at substantially a single wavelength having a width sufficiently narrow to conduct single line spectroscopy and corresponding to a single absorption line at which water molecules absorb light at a substantially greater level than natural gas molecules;

detection means for detecting the intensity of light emitted from said light source; and

determination means for determining the level of water vapor in the natural gas and the level of water vapor in the natural gas using single line harmonic spectroscopy.

14. (Previously Presented) The system of claim 13 wherein said optical means comprises means for emitting light at a wavelength within the range of 1.877-1.901 μm.

15. (Previously Presented) The system of claim 13 wherein said optical means comprises means for emitting light at a wavelength within the range of 2.711-2.786 μm.

16. (Previously Presented) The system of claim 13 wherein said optical means comprises means for emitting light at a wavelength within the range of 920 to 960 nm.

17. (Previously Presented) The system of claim 13 wherein said optical means comprises a light source chosen from a group comprising: tunable diode lasers, color center lasers, quantum cascade lasers, or VCSEL lasers.

18. (Previously Presented) The system of claim 13 further comprising means for supplying a flow of natural gas across said optical means.

19. (Previously Presented) The system of claim 13 further comprising deflection means intermediate said optical means and said detection means for increasing an effective optical path.

20. (Previously Presented) The system of claim 1 wherein said light source is a VCSEL laser operating at a wavelength in a range of 920 to 960 nm.

21. (New) A system comprising:

at least one chemical sensor to detect a level of water vapor in natural gas;

at least one optical sensor to detect a level of water vapor in natural gas, the optical sensor comprising:

a light source emitting light at substantially a single wavelength having a width sufficiently narrow to conduct single line spectroscopy and corresponding to a single absorption line at which water molecules absorb light at a substantially greater level than natural gas molecules;

a detector configured to detect the intensity of light emitted from said light source; and

electronics coupled to said detector for determining the level of water vapor in the natural gas using single line harmonic spectroscopy; and

a supply line delivering natural gas to the at least one chemical sensor and the at least one optical sensor for parallel measurements.